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(3) a set of internals introduced into space above the catalyst bed layer and disposed at least partially within the dilute phase of the catalyst bed; and

(b) removing the unreacted ammonia from the effluent of the catalyst bed by passing the effluent through the set of internals, wherein the ammonia and hydrocarbons present in the effluent contact the dilute phase of the catalyst bed and react therein.

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### REMARKS

Claims 5-9 are in the case. Support for the within amendments of claims 5 and 9 can be found, e.g., on page 4, lines 20-26 of the specification as originally filed.

#### Claim Rejections Under 35 U.S.C. § 102(b)

The Examiner has maintained rejection of claims 5-6 and 8-9 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,470,931 to Callahan *et al.* Applicants respectfully traverse based on the claims after entry of the above amendments.

Claim amendments have been made in light of the Examiner's comments and also for complying with the requirement of form. They may not have been presented earlier because applicants did not fully understand the nature of the Examiner's position until applicants were advised in detail of that position by the Final Office Action (see page 4, lines 5-10 of the Final Office Action).

After the above amendments, it is apparent that there are at least two (2) significant and distinct differences between the instant claimed invention and Callahan *et al.* as follows:

- (1) The instant claimed invention has the feature of "internals introduced into space above the catalyst bed layer", but Callahan *et al.* does not; and
- (2) The instant claimed invention does not use a fixed-bed catalyst, but Callahan *et al.* does use it. This difference is important, but the Final Office Action did not indicate it when outlining Callahan *et al.* The primary feature of Callahan *et al.* is that it uses combination fixed-fluid bed catalysts, which can be seen throughout the disclosure of Callahan *et al.*; for example, from the Title, Abstract, col. 1 lines 60-63, col. 2 lines 20-21, col. 3 lines 47-49, the Examples, col. 6 lines 13-17 (claim 1), and the Figure.

Therefore, because there are differences between the disclosure of Callahan *et al.* and the present invention, applicants respectfully submit that claims 5-6 and 8-9 are not anticipated by Callahan *et al.* under 35 U.S.C. § 102(b).

Claim Rejections Under 35 U.S.C. § 103(a)

The Examiner has maintained the rejection of claim 7 under 35 U.S.C. § 103(a) as being obvious over Callahan *et al.* Applicants respectfully submit the following remarks in support of the non-obviousness of all of the claims:

- (1) Applicants respectfully disagree that the internals disclosed by Callahan *et al.* clearly achieve the same function of the instantly claimed set of internals as seen in col. 6, lines 5-7, wherein ammonia breakthrough is eliminated (see page 4, lines 19-21 of the Final Office Action). The disclosure of Callahan *et al.* clearly and definitely teaches that the internals disclosed therein act as supports for

the fixed-bed catalyst to prevent the fixed-bed particles from moving downward (see col. 2, lines 28-31 of Callahan *et al.*), whereby Callahan *et al.*'s effects are achieved by combination fixed-fluid bed application (see, e.g., the Title of the invention; col. 1 lines 60 to col. 2, line 2; col. 2 lines 20-21; col. 3 lines 47-55).

(2) The primary feature of Callahan *et al.* is that it teaches combination fixed-fluid bed catalysts, which can be seen throughout Callahan *et al.*; for example, from the Title of the invention, Abstract, col. 1 lines 60-63, col. 2 lines 20-21, col. 3 lines 47-49, the examples, col. 6 lines 13-17 (claim 1), and the Figure. Especially, Callahan *et al.* definitely states: "Central to the present invention is that the fixed-bed catalysts are located within the fluid bed" (see col. 2 lines 20-21). In other words, the use of fixed-bed catalysts is the indispensable feature of Callahan *et al.* However, without the use of the fixed-bed catalysts the instantly-claimed invention achieves the same effects as Callahan *et al.* does, which cannot be deduced or expected from Callahan *et al.*

(3) The instantly-claimed invention as amended above results in a structural difference between the claimed invention and Callahan *et al.* so that the instantly-claimed invention is patentably distinguishable from Callahan *et al.* Therefore, Callahan *et al.* would not suggest to one of ordinary skill in the art the present invention. Thus, not only claim 7 but also claims 5-6 and 8-9 of the present invention are patentable over Callahan *et al.*

**CONCLUSION**

For the foregoing reasons, it is submitted that the proposed amendments comply with 37 C.F.R. § 1.116. Therefore, applicants respectfully request entry of these amendments, and submit that the application is now in condition for allowance.

No fee is believed to be due for the submission of this Response. However, should any fees be required, please charge such fees to Deposit Account No. 16-1150.

Respectfully submitted,

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**Appendix A**

*Marked-Up Copy of Amended Claims 5 and 9*

*Application No.: 09/440,277*

*Attorney Docket No.: 8031-007-999*

5. (Twice Amended) A process for removing unreacted ammonia from an effluent of a catalyst bed used in ammoxidation of hydrocarbons, comprising the steps of:

(a) providing a fluidized bed reactor, said reactor comprising:

(1) a catalyst bed for reacting ammonia and hydrocarbons therein;

(2) a dilute phase of the catalyst bed disposed above the catalyst bed;

(3) a set of internals **introduced into space above the catalyst bed layer and** disposed at least partially within the dilute phase of the catalyst bed;

(4) an inlet of a first-stage cyclone separator disposed above the set of internals; and

(b) removing the unreacted ammonia from the effluent of the catalyst bed by passing the effluent through the set of internals, wherein the ammonia and hydrocarbons present in the effluent contact the dilute phase of the catalyst bed and react herein.

9. (Twice Amended) A process for removing unreacted ammonia from an effluent of a catalyst bed used in ammoxidation of hydrocarbons, comprising the steps of:

(a) providing a fluidized bed reactor, said reactor comprising:

(1) a catalyst bed for reacting ammonia and hydrocarbons therein;

(2) a dilute phase of the catalyst bed disposed above the catalyst bed;

(3) a set of internals **introduced into space above the catalyst bed layer and** disposed at least partially within the dilute phase of the catalyst bed; and

(b) removing the unreacted ammonia from the effluent of the catalyst bed by passing the effluent through the set of internals, wherein the ammonia and hydrocarbons present in the effluent contact the dilute phase of the catalyst bed and react therein.

**Appendix B**

*Clean Copy of All Pending Claims 5-9*

*Application No.: 09/440,277*

*Attorney Docket No.: 8031-007-999*

5. A process for removing unreacted ammonia from an effluent of a catalyst bed used in ammoxidation of hydrocarbons, comprising the steps of:

(a) providing a fluidized bed reactor, said reactor comprising:

(1) a catalyst bed for reacting ammonia and hydrocarbons therein;

(2) a dilute phase of the catalyst bed disposed above the catalyst bed;

(3) a set of internals introduced into space above the catalyst bed layer and disposed at least partially within the dilute phase of the catalyst bed;

(4) an inlet of a first-stage cyclone separator disposed above the set of internals; and

(b) removing the unreacted ammonia from the effluent of the catalyst bed by passing the effluent through the set of internals, wherein the ammonia and hydrocarbons present in the effluent contact the dilute phase of the catalyst bed and react herein.

6. The process according to claim 5, wherein the set of internals are selected from the group consisting of packing, baffles, screens and combinations thereof.

7. The process according to claim 5, wherein a bottom side of the set of internals is at a depth within the catalyst bed of not greater than 20% of the total height of the catalyst bed.

8. The process according to claim 5, wherein the hydrocarbons are of a compound selected from the group consisting of propane, propylene, isobutene, xylene and combinations thereof.

9. A process for removing unreacted ammonia from an effluent of a catalyst bed used in ammoxidation of hydrocarbons, comprising the steps of:

(a) providing a fluidized bed reactor, said reactor comprising:

(1) a catalyst bed for reacting ammonia and hydrocarbons therein;

(2) a dilute phase of the catalyst bed disposed above the catalyst bed;

(3) a set of internals introduced into space above the catalyst bed layer and disposed at least partially within the dilute phase of the catalyst bed; and

(b) removing the unreacted ammonia from the effluent of the catalyst bed by passing the effluent through the set of internals, wherein the ammonia and hydrocarbons present in the effluent contact the dilute phase of the catalyst bed and react therein.